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# United States Patent [19]

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Kadomura et al.

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[54] **METHOD AND APPARATUS FOR DRY ETCHING WITH TEMPERATURE CONTROL**

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[73] Assignee: **Sony Corporation**, Tokyo, Japan

[21] Appl. No.: **08/804,412**

[22] Filed: **Feb. 21, 1997**

[30] **Foreign Application Priority Data**

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Mar. 4, 1996	[JP]	Japan	.....	8-045868

[51] **Int. Cl.<sup>7</sup>** ..... **H01L 21/302**

[52] **U.S. Cl.** ..... **438/715; 438/733**

[58] **Field of Search** ..... 438/695, 696, 438/714, 715, 733, 738

[56] **References Cited**

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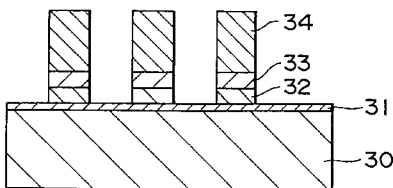
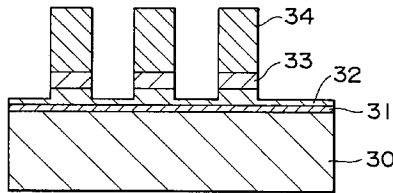
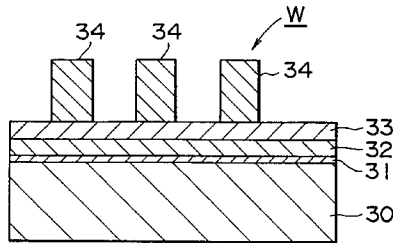
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*Assistant Examiner*—Anita Alanko  
*Attorney, Agent, or Firm*—Hill & Simpson

[57] **ABSTRACT**

A method of dry etching treatment capable of attaining both high selectivity and fine fabrication at a high accuracy simultaneously is provided, in which an etching treatment comprising a plurality of steps are applied to a specimen W in one identical processing apparatus, and the temperature of the specimen is changed between etching of one step and etching of another step succeeding thereto, among the plurality of the steps, thereby applying etching at temperatures different between the one step and the step succeeding thereto.

**16 Claims, 4 Drawing Sheets**



**Tokyo Electron Limited**  
**EXHIBIT 1019**

FIG. 1A

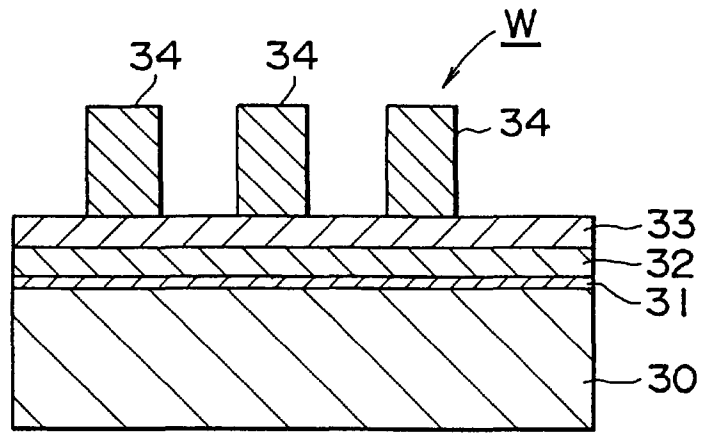


FIG. 1B

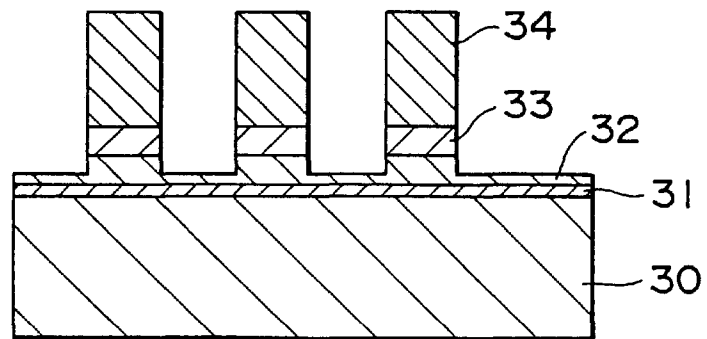


FIG. 1C

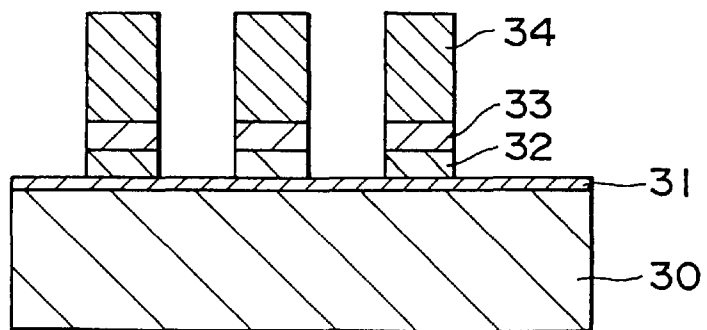


FIG. 2A

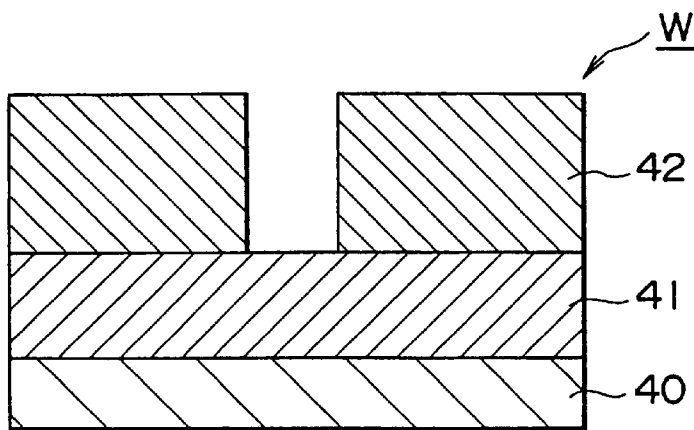


FIG. 2B

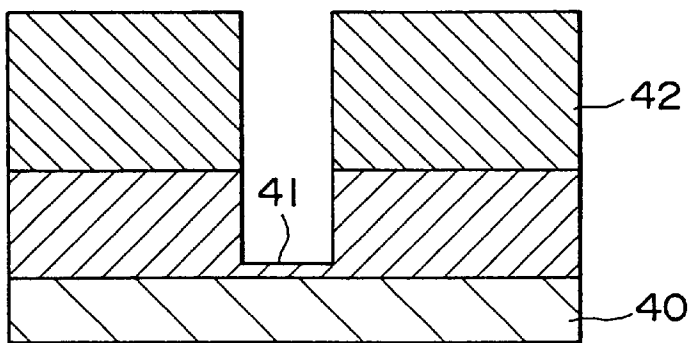


FIG. 2C

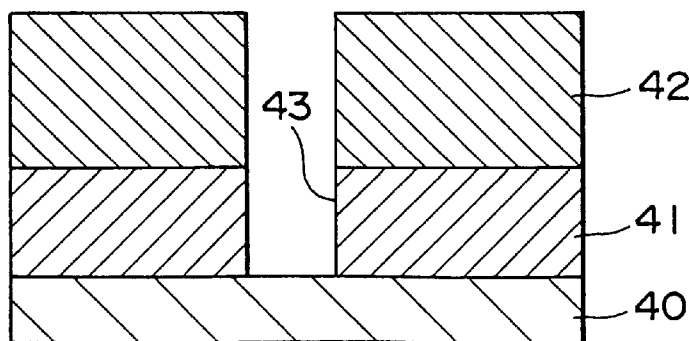


FIG. 3A

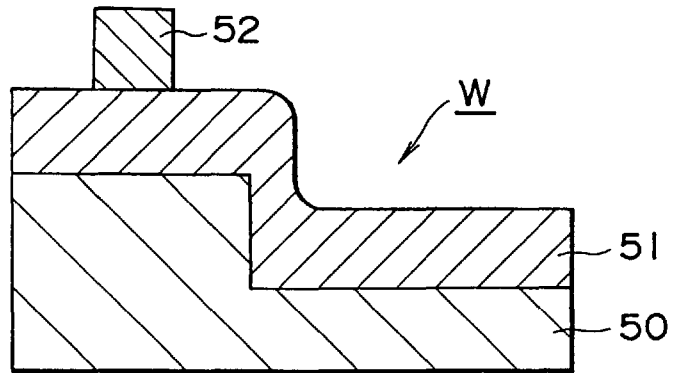


FIG. 3B

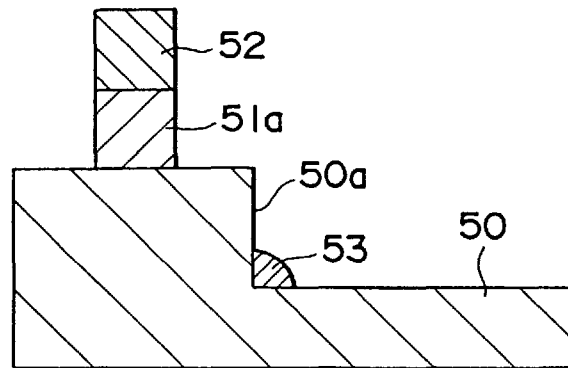
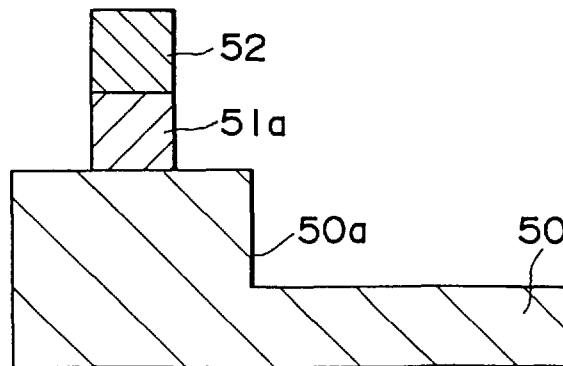


FIG. 3C





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